PGPUB-DOCUMENT-NUMBER: 20020116348
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020116348 A1
TITLE: Dynamic pricing system
PUBLICATION-DATE: August 22, 2002
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US-CL-CURRENT: 705/400

ABSTRACT: The present invention provides a dynamic pricing system that generates pricing recommendations for each product in each market. In particular, the system normalizes historic pricing and sales data, and then analyzes this historic data using parameters describing the user's business objectives to produce a pricing list to achieve these objectives. The system uses historical market data to forecast expected sales according to a market segment, product type, and a range of future dates and to determine the effects of price changes on the forecasted future sales. The system further calculates unit costs for the product. The system then estimates profits from sales at different prices by using the sales forecasts, adjusting these sales forecasts for changes in prices, and the costs determinations. The system optionally optimizes prices given current and projected inventory constraints and generates alerts notices according to pre-set conditions.

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Summary of Invention Paragraph - BSTX: [0007] In another embodiment, the dynamic pricing system is general enough to provide price recommendations with varying degrees of available data. In particular, the system produces a viable pricing value estimate using available data, and then modifies that price estimate with increased forecasting accuracy by incorporating the new data, as it becomes available. In this way, the system functions constantly and in real time to update and alter price recommendations to reflect the most recently acquired sales data.

Detail Description Paragraph - DETX: [0018] The transaction data in the transaction database 120 generally includes information that specifies the details of each transaction, such as the date of the transaction, the transacted product, the price for the transacted products, the parties involved in the transaction, etc. Each transaction has several attributes specifying its different features, and

by exploiting the similarities within the attributes, the transactions can be grouped by market segments. Furthermore, different market segments may be grouped into mutually exclusive and collectively exhaustive sets called channel segments (CS). Within this disclosure, channel segments are defined to be aggregations of transactions along market segment dimensions. For example, geographic area, size of sales, method of delivery, buyers' characteristics, etc. may be used to define channel segments. The channel segments are specified by the user through the input device 10, and the channel segments must combine to form a mutually exclusive, exhaustive set on the universe of all sales transactions (the "market"). In other words, each and every sale can be classified into only one channel segment. These channel segments are the level at which product prices will be recommended and are the level at which the dynamic pricing system 100 computes forecasts. Broadly defining the channel segments improves numerical analysis by increasing the number of samples for analysis. However, broadly defining the channel segments limits possible gains to the user/seller increase profits from specifically pricing multiple smaller channel segments.

Detail Description Paragraph - DETX: [0021] A price sensitivity model (PSM) 140, FIG. 2, uses the information in the transaction database 120 to predict price sensitivity of buyers for the product(s) in issue. In other words, the PSM 140 mathematically estimates how changes in price for a product affect buyers' demand for that product. The price sensitivity calculations from the PSM 140 are important because the dynamic pricing system 100 uses these calculations to predict changes in sales of the product at different prices when producing a profit maximizing price for the product. For a specific channel segment, the PSM 140 generally models price sensitivity for a particular product through a function that varies with price P to represent the relative changes in sales volumes X. The parameters for the price sensitivity function, F.sub.PS(P), may be empirically determined through surveys, experiments, or analysis or, otherwise, may be supplied by the user through the input device 20. Alternatively, the dynamic pricing system 100 may dynamically determine the parameters for the F.sub.PS(P) from analyzing the transaction data in the transaction database 120 according to known accounting and statistical methods. In other words, the PSM 140 looks to see how price changes in the past have affected sales within the channel segment and uses these results to predict the effect of future price adjustments. The dynamic pricing system 100 determines separate price sensitivity functions F.sub.PS(P) for every product and channel segment.

Detail Description Paragraph - DETX: [0026] where K.sub.i.gtoreq.0 and r .apprxeq.0.2. In Eq. 2, the variable r represents the maximum possible rate of change for price sensitivity function, and the K.sub.i represent market factors that limit the maximum rate of change r at time period i. As before, Equation 2 concludes that F.sub.PS(P.sub.REF)=1, so that sales within the channel segments do not change if prices do not change . The r and K.sub.i are determined using known statistical techniques by analyzing the transaction records and parameters related the product's price elasticity. Also, the model may further assume that F.sub.PS(O)=2, so that offering free products doubles consumption of that product within the channel segment. Other functional forms for F.sub.PS are possible, corresponding to alternative expressions for equations 1 and 2.

Detail Description Paragraph - DETX: [0027] Alternatively, the PSM 140 may use a linear model. In the linear model, F.sub.PS(P) is a line defined by a slope estimating the change in sales per change in price and an intersect on the price axis at which sales volume is zero.

Detail Description Paragraph - DETX: [0033] The accuracy of the sales forecasts from the NSF 130 and the SF 160 allows the dynamic pricing system 100 to produce reasonable pricing recommendations. In forecasting future sales, the NSF 130 and the SF 160 use a defined forecast horizon that specifies how far in the future to forecast sales, and the accuracy of the sales forecast is improved by using shorter-term forecast horizons where possible since short-term forecasts are intrinsically more accurate. Because the date range over which forecasts are made may depend on the length of restocking intervals, these intervals should be chosen carefully. In the case of very long restocking cycles, the dynamic pricing system 100 can model the restocking intervals as a series of shorter forecast horizons.

Detail Description Paragraph - DETX: [0071] In another embodiment, the dynamic pricing system 100 further includes an alert generator 220, FIG. 2, that operates after a new set of product prices has been generated or a new day's worth of transactions has been loaded. The alert generator 220 notifies the user of any significant changes in prices or other product characteristics, including the number of actual units sold or actual margin that may indicate when actual sales behavior differs significantly from earlier forecasted behavior.

Detail Description Paragraph - DETX: [0072] The user can choose, through the input device 10, conditions that cause the alert generator 220 to give notices, and these selected alert conditions are stored in an alert database 230. For example, the alert generator 220 may inform the user when statistics in the actual sales different from the expected, forecast values. For any particular product in a channel segment, the alert generator 220 may look at inventory statistics, the number of sales, the actual price of the products in the sales, the actual costs, revenues or the actual profits. The alert generator 220 notifies the user when the actual numbers differ from the forecasted values determined by other components of the dynamic pricing system 100.

Detail Description Paragraph - DETX: [0077] Based on this model, a dynamic pricing process 500 is illustrated in FIG. 7. Specifically, the dynamic pricing system collects past sales data, step 510 and uses this data to forecast future sales at different prices, step 520. Using results from the step 520, the dynamic pricing system selects prices that optimize profits, step 530. The profit maximization may be adjusted accordingly by choosing conditions, step 540. In step 550, the seller then sells in each channel segment at the recommended prices from the step 530. New sales information reflecting the price recommendations from the step 530 are collected, step 560, and added to the other past sales data (step 510), and the process repeats from the start.

Claims Text - CLTX: 10. The system of claim 1 further comprising a means for forecasting a response of a competitor to a change in the price of the product by the seller, whereby the means for forecasting future sales volume at different prices accounts for the competitor's response.

Claims Text - CLTX: 40. A dynamic pricing network for determining a recommended price for a product, the network comprising: a database storing information on prior transactions of the product; a normalized sales forecast module that accesses the information in the database to form a normalized forecast of future sale volumes; a price sensitivity module that accesses the information in the database to determine price sensitivity of consumers to changes in price of the product; a sales forecast module that uses the normalized forecast and the price sensitivity to form a forecast of future sales volumes at each of multiple different prices; a costs module that accesses the information in the database to determine costs for the product; and an optimizer that recommends a profit-maximizing price using the forecast of future sales volumes and the costs.

Claims Text - CLTX: 41. The dynamic pricing network of claim 40 further comprising a pre-processor that accesses the information in the database and classifies the past transactions into one or more channel segments, whereby the pre-processor classifies each of the transactions into only one channel segment.

Claims Text - CLTX: 42. The dynamic pricing network of claim 41, wherein the optimizer further determines an optimal price in each of the channel segments.

Claims Text - CLTX: 43. The dynamic pricing network of claim 41, wherein the cost module further determines a cost in each of the channel segments.

Claims Text - CLTX: 44. The dynamic pricing network of claim 40 further comprising a strategic objectives database storing data on one or more strategic objectives, wherein the optimizer accesses the strategic objectives database and accounts for one or more strategic objectives when recommending the profit-maximizing price.

Claims Text - CLTX: 45. The dynamic pricing network of claim 40 further comprising: an alert condition database that stores one or more alert conditions; and an alert generator that notifies a user when one of the alert conditions occurs.